

BOOKS

Abner Shimony's Charming, Informative Take On the Calendar Pope Gregory Wrought

Tibaldo and the Hole in the Calendar

▶ Abner Shimony
Copernicus (Springer-Verlag),
New York, 1998. 165 pp.
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Reviewed by N. David Mermin

Despite the excitement over the impending new millennium, the fact is that, as turns of the century go, this one will be of the boring variety, because February 2000 will have the usual 29 days we have come to expect from years divisible by 4. You will have to wait until 2100 to find the gap in the quadrennial parade of leap years decreed by Pope Gregory XIII in 1582 for years divisible by 100 but not by 400.

Gregory was rectifying a difficulty created by Julius Caesar, who had arranged for leap years to come a little too often. The slight Julian excess of extra February days gradually pushed March deeper into the astronomical year, and the vernal equinox, which had fallen on the 21st of March in 325, had moved all the way back to the 11th of March by 1582. This became a problem because the Council of Nicaea in 325 had, *inter alia*, set Easter to be the first Sunday after the first full moon on or after the vernal equinox. All would have been well if the council had stopped with that, but it also defined the vernal equinox to be the 21st of March, the day it fell on in 325. As a result, beginning in 325, ecclesiastical spring started a slow drift toward actual summer, taking the spring festival of Easter along with it.

So Gregory had a period problem and a phase problem. He solved the period problem with that modification of Caesar's rule at turn-of-the-century years, which we will not, alas, be privileged to experience two years from now. He could easily have solved the phase problem by redefining the vernal equinox to be the 11th of March. But perhaps because popes do not tamper lightly even with minor technical points in the Nicene Creed, he took the

easier course and subtracted the accumulated error of ten too many 29ths of February since the Council, by proclaiming that, in 1582, the 4th of October would be followed by the 15th.

And thereby hangs a tale. At least it does if you are Abner Shimony, who holds PhDs in both philosophy and physics, who publishes theorems in verse and who coins terms like "passion at a distance" to capture the evanescent character of quantum nonlocality. The question that immediately comes to the right kind of mind contemplating these momentous events is this: What about all those kids in 1582 whose birthdays fell between the 5th and 14th of October? How did *they* like the great Gregorian calendar reform?

You might object that nobody paid any attention to birthdays way back then, and you would be right. Well, almost right. Fortunately for literature, there was in Bologna one Teresa Bondi, who, centuries ahead of her time, regularly prepared a great feast on the anniversary of the birth of each of her eight children. And still more fortunately for us, and perhaps even for him, her youngest, Tibaldo, was born on the 10th of October in 1570.

This is the story of Tibaldo's great struggle to save his 12th birthday feast. It is in the grand tradition of *Alice in Wonderland* or *Winnie the Pooh*—a children's book that will delight adults. Like its predecessors, it is adorned with charming illustrations, in this case by Jonathan Shimony, the author's son. I will not spoil the tale by telling you how it turns out, except to remark that, thanks to Tibaldo's ingenuity and his special blend of courage and impertinence, Riemann surfaces would have come as no surprise to Gregory XIII.

In the course of telling his tale, Shimony *père* gives his young (and not so young) readers lessons in early Church history, Roman numerals, Renaissance medicine and, above all, astronomy, while Shimony *filis* provides us with a full-page, hand-drawn copy of an authentic rendering into papal Latin of an entirely imaginary codicil, which Tibaldo induced the Pope to append to his original proclamation. "A Note on Fact and Fiction" at the beginning helps the curious reader to distinguish what really happened from what the author clearly feels ought to

have happened, even though it didn't. In "What Happened Afterwards," we learn the further imaginary adventures of Tibaldo and his friends and relations, and the further real vicissitudes of the calendar, all the way to the Bolsheviks. In a final scientific appendix graced with delightful technical figures, we are told of subsequent developments in astronomy, including the discovery of the Big Bang and the radiation it left behind.

This attractive book will make an entertaining and instructive gift for birthday celebrants of any age—especially those born between the 5th and 14th of October.

Physics in the Nineteenth Century

▶ Robert D. Purrington
Rutgers U. P., New Brunswick,
N.J., 1997. 249 pp.
\$55.00 hc (\$25.00 pb)
ISBN 0-8135-2441-5 hc
(0-8135-02442-3 pb)

Physicist Robert D. Purrington had a specific aim in mind when he wrote *Physics in the Nineteenth Century*. "It is," he writes in the book's preface, "in a sense, an attempt to regain for scientists some lost ground, namely the prerogative to explore the history and evolution of their discipline." This history, as he sees it, rests on three basic assumptions: (a) There is a real world that imposes itself on every human being; (b) this world consists of empirical facts; and (c) "it is . . . characteristic of the sciences that they are built on empirical facts." This view, he argues, contrasts with the perspective of historians who "endeavor to understand the way in which scientific practice was molded by the culture of its time."

While insisting that both approaches have their merits, the author clearly wants to establish the primacy of his approach. He would deny such primacy to the sociologists and anthropologists, and some historians, who have created what he and I both agree is the myth of the "social construction of science," which basically denies the independent reality of an outside world and the existence of empirical facts.

By constructing such a dichotomy,

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